

<b>Notice of Allowability</b>	Application No.	Applicant(s)
	10/035,801	LIM ET AL.
	Examiner Esaw T. Abraham	Art Unit 2133

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address--*

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1.  This communication is responsive to amdt filed 12/12/05.
2.  The allowed claim(s) is/are 1-25.
3.  Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a)  All    b)  Some\*    c)  None    of the:
    1.  Certified copies of the priority documents have been received.
    2.  Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3.  Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4.  A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5.  CORRECTED DRAWINGS ( as "replacement sheets") must be submitted.
  - (a)  including changes required by the Notice of Draftsperson's Patent Drawing Review ( PTO-948) attached
    - 1)  hereto or 2)  to Paper No./Mail Date \_\_\_\_\_.
  - (b)  including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6.  DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

#### Attachment(s)

1.  Notice of References Cited (PTO-892)
2.  Notice of Draftsperson's Patent Drawing Review (PTO-948)
3.  Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date \_\_\_\_\_
4.  Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5.  Notice of Informal Patent Application (PTO-152)
6.  Interview Summary (PTO-413),  
Paper No./Mail Date 02/24/06.
7.  Examiner's Amendment/Comment
8.  Examiner's Statement of Reasons for Allowance
9.  Other \_\_\_\_\_.

***EXAMINER'S AMENDMENT***

1. An examiner's amendment to the record appears below. Should the changes and or additions be acceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no latter than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with John Mocker on 02/24/06.

2. The application has been amended as follows:

As per claim 1:

Line, 3 change "capable of turbo encoding" to ---configured for turbo encoding---.

Line, 5 change "capable of interleaving" to ---configured for interleaving---.

Line, 8 change "capable of turbo encoding" to ---configured for turbo encoding---.

As per claim 4:

Line, 4 change "capable of interleaving" to ---configured for interleaving---.

Line, 7 change "capable of convolutionally encoding" to ---configured for convolutionally encoding---.

As per claim 5:

Line, 4 change "capable of interleaving" to ---configured for interleaving---.

Line, 7 change "capable of convolutionally encoding" to ---configured for convolutionally encoding---.

As per claim 6:

Line, 3 change “capable of turbo encoding” to ---configured for turbo encoding---.

Line, 6 change “capable of receiving data” to ---configured for receiving data ---.

Line, 7 change “capable of interleaving” to ---configured for interleaving---.

Line, 9 change “capable of turbo encoding” to ---configured for turbo encoding---.

Line, 11 change “capable of turbo encoding” to ---configured for turbo encoding---.

Line, 13 change “capable of multiplexing” to ---configured for multiplexing---.

As per claim 7:

Line, 4 change “capable of puncturing” to ---configured for puncturing---.

As per claim 8:

Line, 3 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

Line, 5 change “capable of interleaving” to ---configured for interleaving---.

Line, 7 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

As per claim 9:

Line, 4 change “capable of interleaving” to ---configured for interleaving---.

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Line, 7 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

As per claim 10:

Line, 3 change “capable of turbo encoding” to ---configured for turbo encoding---.

Line, 5 change “capable of interleaving” to ---configured for interleaving---.

Line, 8 change “capable of turbo encoding” to ---configured for turbo encoding---.

As per claim 12:

Line, 3 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

Line, 4 change “capable of interleaving” to ---configured for interleaving---.

Line, 7 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

As per claim 13:

Line, 3 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

Line, 4 change “capable of interleaving” to ---configured for interleaving---.

Line, 7 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

As per claim 14:

Line, 4 change “capable of receiving data” to ---configured for receiving data ---.

Line, 6 change “capable of receiving data” to ---configured for receiving data ---.

Line, 7 change “capable of interleaving” to ---configured for interleaving---.

Line, 8 change “capable of interleaving” to ---configured for interleaving---.

Line, 9 change “capable of turbo encoding” to ---configured for turbo encoding---.

Line, 11 change “capable of turbo encoding” to ---configured for turbo encoding---.

Line, 13 change “capable of multiplexing” to ---configured for multiplexing---.

As per claim 15:

Line, 3 change “capable of puncturing” to ---configured for puncturing---.

As per claim 16:

Line, 3 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

Line, 4 change “capable of interleaving” to ---configured for interleaving---.

Line, 7 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

As per claim 17:

Line, 3 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

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Line, 4 change “capable of interleaving” to ---configured for interleaving---.

Line, 7 change “capable of convolutionally encoding” to ---configured for convolutionally encoding---.

*Examiner's statement for reason for allowance*

2. Claims 1-25 have been allowed.

The following is an examiner's statement for allowance:

**As per claim 1:**

The prior art, Yi (U.S. PN: 5,907,582) of record teach or disclose a first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, (1)-(3)). Yi further teaches a first and second multiplexers for multiplexing the source data information together with first punctured code sequence and second punctured code sequence (see claim 17). Park et al. (U.S. PN: 6,397,367) in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see col. 2, lines 22-33). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious an apparatus for use as a channel encoder comprising a first Turbo encoder capable of Turbo encoding data, having an output; an interleaver unit having an input coupled to said output of said first Turbo

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encoder, said interleaver unit capable of interleaving Turbo encoded data from said first Turbo encoder, and said interleaver unit having an output; and a second Turbo encoder having an input coupled to said output of-said interleaver unit, said second Turbo encoder capable of Turbo encoding interleaved data from said interleaver unit.

Consequently, claim 1 is allowed over the prior art.

Claims 2-5, which is/are directly or indirectly dependent/s of claim 1 are also allowable over the prior art of record.

**As per claim 6:**

The prior art, Yi (U.S. PN: 5,907,582) of record teach or disclose a first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, (1)-(3)). Yi further teaches a first and second multiplexers for multiplexing the source data information together with first punctured code sequence and second punctured code sequence (see claim 17). Park et al. (U.S. PN: 6,397,367) in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see col. 2, lines 22-33). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious an apparatus for use as a channel encoder comprising a first Turbo encoder for of Turbo encoding data, wherein said first Turbo encoder is capable of receiving data from a source encoder of said digital data communications system; an interleaver coupled in parallel with said first Turbo

encoder, wherein said interleaver unit is capable of receiving data from said source encoder of said digital data communications system, and wherein said interleaver unit is capable of interleaving said data from said source encoder; a second Turbo encoder capable of Turbo encoding data, wherein an input of said second Turbo encoder is coupled to an output of said interleaver unit, and wherein said second Turbo encoder is capable of Turbo encoding interleaved data from said interleaver unit; and a multiplexer having a first input coupled to an output of said first Turbo encoder and having a second input coupled to an output of said second Turbo encoder, said multiplexer capable of multiplexing data from said first Turbo encoder and from said second Turbo encoder. Consequently, claim 6 is allowed over the prior art.

Claims 7-9, which is/are directly or indirectly dependent/s of claim 6 are also allowable over the prior art of record.

**As per claim 10:**

The prior art, Yi (U.S. PN: 5,907,582) of record teach or disclose a digital communication system comprising first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, (1)-(3)). Yi further teaches a first and second multiplexers for multiplexing the source data information together with first punctured code sequence and second punctured code sequence (see claim 17). Park et al. (U.S. PN: 6,397,367) in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see

col. 2, lines 22-33). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a channel encoder comprising a first Turbo encoder having an output, said first Turbo encoder for Turbo encoding data from a source encoder of said digital data communications system, an interleaver unit having an input coupled to said output of said first Turbo encoder, said interleaver unit capable of interleaving Turbo encoded data from said first Turbo encoder, and said interleaver unit having an output; and a second Turbo encoder having an input coupled to said output of said interleaver unit, said second Turbo encoder capable of Turbo encoding interleaved data from said interleaver unit. Consequently, claim 10 is allowed over the prior art.

Claims 11-13, which is/are directly or indirectly dependent/s of claim 10 are also allowable over the prior art of record.

**As per claim 14:**

The prior art, Yi (U.S. PN: 5,907,582) of record teach or disclose a digital communication system comprising first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, (1)-(3)). Yi further teaches a first and second multiplexers for multiplexing the source data information together with first punctured code sequence and second punctured code sequence (see claim 17). Park et al. (U.S. PN: 6,397,367) in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see

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col. 2, lines 22-33). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a channel encoder comprising a first Turbo encoder capable of Turbo encoding data, wherein said first Turbo encoder is capable of receiving data from a source encoder of said digital data communications system; an interleaver unit coupled in parallel with said first Turbo encoder, wherein said interleaver unit is capable of receiving data from said source encoder of said digital data communications system, and wherein said interleaver is capable of interleaving said data from said source encoder, a second Turbo encoder capable of Turbo encoding data, wherein an input of said second Turbo encoder is coupled to an output of said interleaver unit, and wherein said second Turbo encoder is capable of Turbo encoding interleaved data from said interleaver unit; and multiplexer having a first input coupled to an output of said first Turbo encoder and having a second input coupled to an output of said second Turbo encoder, said multiplexer multiplexing data from said first Turbo encoder and from said second Turbo encoder. Consequently, claim 14 is allowed over the prior art.

Claims 15-17, which is/are directly or indirectly dependent/s of claim 14 are also allowable over the prior art of record.

**As per claim 18:**

The prior art, Yi (U.S. PN: 5,907,582) of record teach or disclose a digital communication system comprising first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, (1)-(3)). Yi further teaches a first and second multiplexers for multiplexing the source data information together with first punctured code sequence and second punctured code

sequence (see claim 17). Park et al. (U.S. PN: 6,397,367) in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see col. 2, lines 22-33). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a system comprising a channel encoder, a method of operating said channel encoder comprising the steps of: encoding data with a first Turbo encoder; interleaving Turbo encoded data from said first Turbo encoder with a first interleaver unit; and encoding interleaved data from said first interleaver unit with a second Turbo encoder. Consequently, claim 18 is allowed over the prior art.

Claims 19-21, which is/are directly or indirectly dependent/s of claim 18 are also allowable over the prior art of record.

**As per claim 22:**

The prior art, Yi (U.S. PN: 5,907,582) of record teach or disclose a digital communication system comprising first turbo encoder for turbo encoding digital source information, an interleaver for interleaving the digital source information, second turbo encoder for turbo encoding the interleaved digital source information into a second code sequence (see claim 16, (1)-(3)). Yi further teaches a first and second multiplexers for multiplexing the source data information together with first punctured code sequence and second punctured code sequence (see claim 17). Park et al. (U.S. PN: 6,397,367) in figure 5 teach a first channel coder (first turbo encoder) (502) and a second channel coder (second turbo encoder) (512) output turbo encoded data and coupled to a multiplexer (503) whereby the multiplexed data is rate matched at

a rate matcher (504) by symbol repetition, puncturing or puncturing-after-symbol repetition (see col. 2, lines 22-33). However, the prior art taken singly or in combination fail to teach, anticipate, suggest, or render obvious a channel encoder, a method of operating said channel encoder, said method comprising the steps of: encoding data from a source encoder of said digital data communications system with a first Turbo encoder; interleaving data from a source encoder of said digital data communications system with a first interleaver unit coupled in parallel with said first Turbo encoder; encoding interleaved data from said first interleaver unit with a second Turbo encoder coupled to said first interleaver unit; and multiplexing interleaved data from said first interleaver unit and Turbo encoded data from said first Turbo encoder in a multiplexer coupled to said first interleaver unit and to said first Turbo encoder. Consequently, claim 22 is allowed over the prior art.

Claims 23-25, which is/are directly or indirectly dependent/s of claim 22 are also allowable over the prior art of record.

Any comment considering necessary by the applicant must be submitted to near than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled “Comments on Statement of Reason for Allowance”.

### *Conclusion*

3. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Esaw Abraham whose telephone number is (571) 272-3812. The examiner can normally be reached on M-F 8-5.

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If attempts to reach the examiner by telephone are successful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone numbers for the organization where this application or proceeding is assigned (571) 273-8300.

Information regarding the status of an Application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or PUBLIC PAIR. Status information for unpublished applications is available through Private Pair only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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